The solution of linear programming ...

for this system etc. The U-convolutions of (1) are denoted as simple convolutions, the convolutions of the convolutions of (1) as repeated convolutions. A convolution of (1) is called complete if its inequalities contain no non-zero functions or if it is empty.

Theorem 1: If (1) is compatible (i.e. there exists a solution in L), then every non-empty simple convolution of (1) is compatible too. If at least one simple convolution of (1) is compatible or empty, then system (1) is compatible.

Let $f^{(i)}(x)$ $(i = 1,2,\ldots,s)$ be a system of real linear functions on L. The least upper bound of the values of t for which the system

$$\begin{aligned} f_j(x) - a_j &\leqslant 0 \quad (j = 1,2,\ldots, m'), \\ f_j(x) - a_j &< 0 \quad (j = m' + 1,\ldots, m) \qquad (4) \\ -f^{(i)}(x) + t &\leqslant 0 \quad (j = 1,2,\ldots, s) \end{aligned}$$

is compatible (system (1) is here assumed to be compatible), is

Card 3/5

The solution of linear programming ...

called upper minimum value of the chosen system of functions on the set of the solutions of (1).

Theorem 2: Let the system (1) be compatible and let M be the set of the solutions of (1). If the system of the real linear functions $f^{(i)}(x)(x \in L)$ $(i = 1,2,\ldots,s)$ possesses an upper minimum value on M, then every complete convolution of (4) contains the parameter t (i.e. in it at least one of the coefficients of t is different from zero). If any complete convolution of (4) contains the parameter t, then the considered system of functions possesses an upper minimum value on the set M; this one is identical with the least upper bound of the values of t which satisfy such a convolution, and is attained on M if and only if there is a maximum value among these values.

The author gives an example for determining the upper minimum value of two functions on the set of the solutions of a system of inequalities. Theorem 2 is used for the determination, where certain simplifying elementary transformations are alternated with repeated convolutions.

Card 4/5

28639

S/020/61/139/006/004/022
The solution of linear programming ... C111/C333

There is 1 Soviet-bloc and 1 non-Soviet-bloc reference. The reference to English-language publication reads as follows: H. W. Kuhn, Am. Math. Monthly, 63, 4, 27 (1956).

PRESENTED: April 7, 1961, by A. N. Kolmogorov, Academician

SUBMITTED: April 5, 1961

Card 5/5

S/020/62/145/001/003/018
B112/B104

AUTHOR: Chernikov, S. N.

TITLE: Algorithms for determining the conditional solutions of a system of linear inequalities

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 1, 1962, 41 - 44

TEXT: Two algorithms concerning linear inequalities are considered. The first one is called the algorithm of consecutive transfixions. It gives a conditional solution which corresponds to a given solution of the system of inequalities

$$T_j(x) = L_j(x) - a_j \equiv a_{j1}x_1 + \ldots + a_{jn}x_n - a_j \leqslant 0$$

($j = 1,\ldots,m$). The second one is called the algorithm of consecutive detractions. It gives a solution with a minimum value of the coordinate eliminated, which corresponds to a given conditional solution of a system of linear inequalities. The second algorithm may be applied to the solution of the fundamental problem of linear programming.

Card 1/2

Algorithms for determining...

PRESENTED: February 13, 1962, by A. N. Kolmogorov, Academician

SUBMITTED: February 13, 1962

Card 2/2

CHERNIKOV, S.N.

Convolution of finite systems of linear inequalities. Dokl. AN SSSR 152 no.5:1075-1078 O '63. (MIRA 16:12)

1. Sverdlovskoye otdeleniye Matematicheskogo instituta im. V.A.Steklova AN SSSR. Predstavleno akademikom A.I.Mal'tsevym.

CHERNIKOV, S.N.

Haar's theorem on infinite systems of linear inequalities. Usp. mat. nauk 18 no.5:199-200 S-O '63. (MIRA 16:12)

CHERNIKOV, S.N.

Fundamental theorems in the theory of linear inequalities.
Sib. mat. zhur. 5 no.5:1181-1190 S-O '64.
(MIRA 17:11)

CHERNIKOV, S.N.

Method for the convolution of systems of linear inequalities. Usp. mat. nauk 19 no.5:149-155 S-O '64. (MIRA 17:11)

CHERNIKOV, S.N.

Infinite groups with certain prescribed properties of the systems of their infinite subgroups. Dokl. AN SSSR 159 no.4:759-760 D '64

1. Sverdlovskoye otdeleniye Matematicheskogo instituta imeni V.A. Steklova AN SSSR. Predstavleno akademikom A.I. Mal'tsevym.

AUTHOR: Chernikov, S. N. (Sve

TITLE: Convolution of finite

ABSTRACT: This article deals
optimal

$$r_j(x) + t_j s$$

where $f_j(x)$ are real linear functions and t_j are certain real parameters or numbers, in order to

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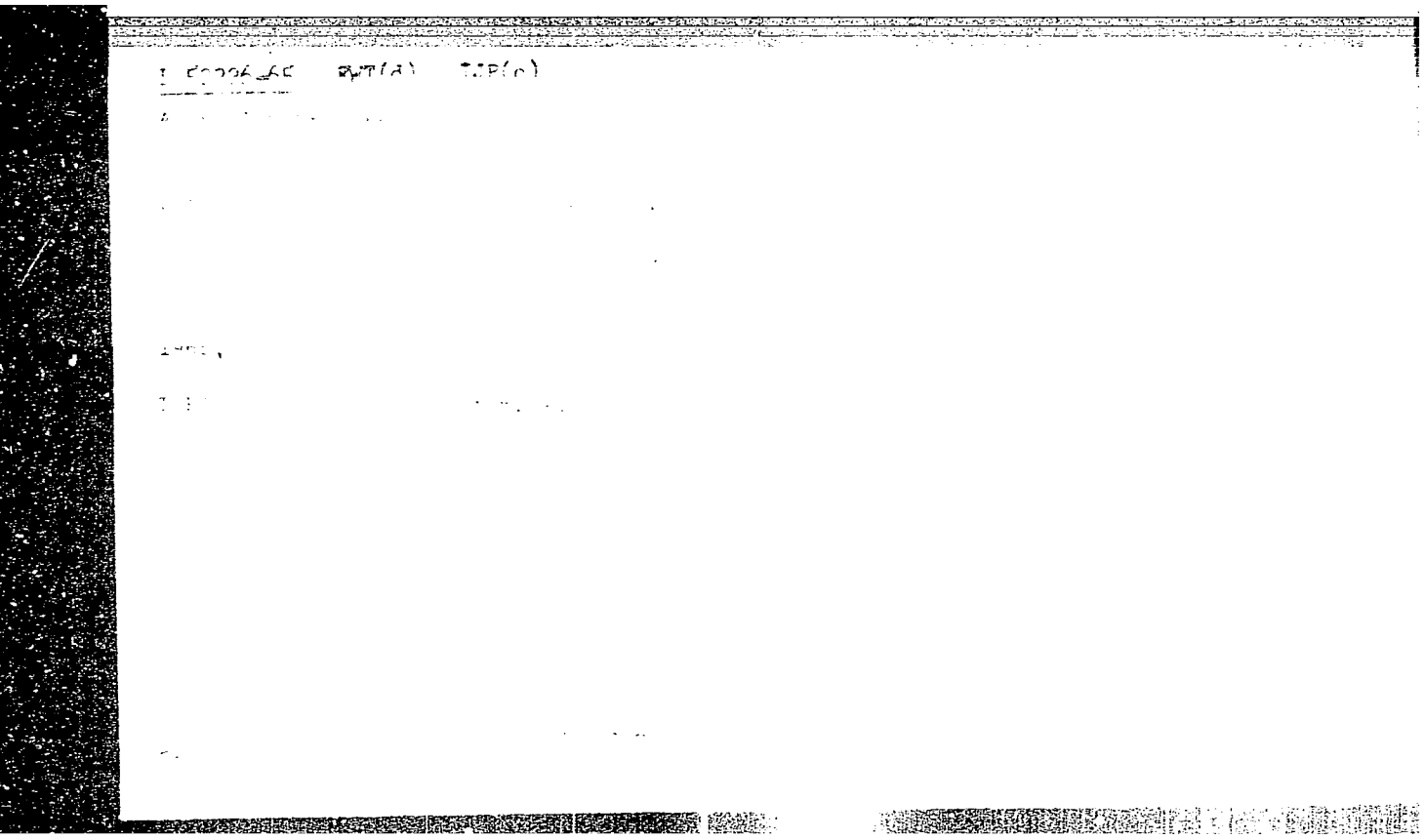
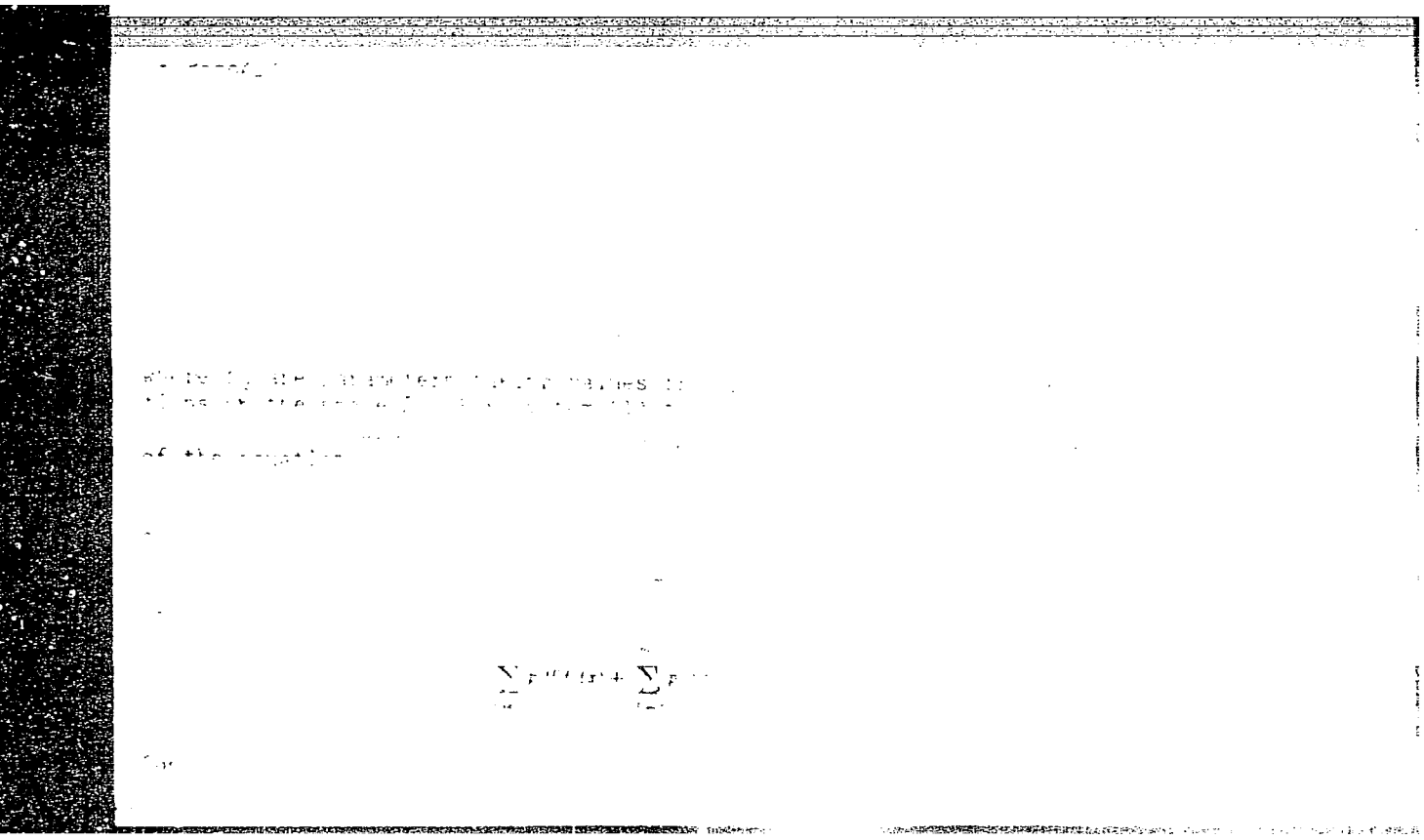
simultaneous inequalities of t

where a and a are real num





[illegible] coincides with some (0,t,0)-convolution of that system. The algorithm is presented for eliminating variables by convolution [illegible] an example is given [illegible]

CHERNIKOV, S.N.

Polyhedral closed systems of linear inequalities. Dokl. AN SSSR 161 no.1:55-58 Mr '65. (MIRA 18:3)

1. Sverdlovskoye otdeleniye Matematicheskogo instituta im. V.A. Steklova AN SSSR. Submitted October 3, 1964.

CHERNIKOV, S.S.

Komir-Auliye cave. Izv.AN Kazakh.SSR.Ser.geol. no.16:121-124 '53.
(MLRA 9:5)

(Abay District--Caves)

CHERNIKOV, S. S., Engineer

ENIMS (-1946-)

"New Methods of Thread Cutting" Stanki I Instrument, 17, Nos. 2-3, 1945

CHERNIKOV, S. S.

Ancient metallurgy and mining in the Western Altai Alma-Ata, Izd-vo Akademii nauk Kazakhskoi SSR, 1949. 111 p., maps (1 fold.) (51-20512)

GN824.A4C5

CHERNIKOV, S. S. Engineer

"Investigation of the Reversing Gear of the Table of Planing Machines With Hydraulic Drive." Sub 9 Jan 52, Moscow Machine Tool and Tool Inst imeni I. V. Stalin

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

Chernikov, S.S.

USSR/Engineering

Card 1/1 Pub. 103 - 3/23

Authors : Chernikov, S. S.; Nemakhov, G. A.; and Ognev, N. N.

Title : Multiple-disc electromagnetic clutch

Periodical : Stan. i instr. 2, 6-7, Feb 1954

Abstract : The advantages and deficiencies of multiple disc electromagnetic clutches used in various industrial machines, are discussed. The effect of the lubrication viscosity on the wear of the coupling is explained. The structural components and mechanical properties of multiple disc electromagnetic couplings are described. Drawing.

Institution : .....

Submitted : .....

CHERNIKOV, S.S.; MAKUYLOV, L.K.; BELOV, V.S.

The MA-1 vertical broaching machine as part of assembly line. Stan. i instr. 27 no.11:18-20 N'56. (MIRA 10:1)
(Broaching machines)

BELOV, V.S.; MANUYLOV, L.K.; OSIPOV, K.A.; CHERNIKOV, S.S.; ACHERKAN, N.S., prof., doktor tekhn. nauk, red.; PELEKH, M.A., tekhn. red.

[Modern methods of broaching used abroad; survey compiled on the basis of foreign periodical literature in the field of the manufacture of machinery] Sovremennye metody protiagivaniia za rubezhom; obzor sostavlen po materialam zarubezhnoi periodicheskoi literatury v oblasti mashinostroeniia. Pod red. N.S.Acherkana. Moskva, Vses. in-t nauchnoi tekhn. informatsii, 1961. 57 p. (MIRA 14:7)

(Broaching machines)

26888
S/121/61/000/010/001/005
D040/D113

1.1100 also 1413

AUTHORS: Ostretsov, G.V., Manuylov, L.K., Bron, A.M., and Chernikov, S.S.

TITLE: Profile errors of rolled gears, and a method for their correction

PERIODICAL: Stanki i instrument, no. 10, 1961, 3-6

TEXT: Thread rolling is being studied and introduced into practical use by a number of Soviet organizations. ENIMS has conducted studies of the hot rolling process with subsequent cold sizing, and cold sizing of milled gears (instead of shaving). The article presents some results of the ENIMS work and detailed information on a method developed for determining profile errors on involute straight tooth rolled gears, and for correcting the rolling gear to produce gears with accurate involute tooth profile. The rolling gear is corrected by corrections made on the grinding wheel. As stated in ENIMS experiments, profile errors on gears produced with rolling gears with nominal profile, i.e. not modified, amount to 0.06-0.08 mm, and the

Card 1/2

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D040/D113

Profile errors of rolled gears ....

errors are regular. The profile correction method is explained with the aid of diagrams. The method of correcting the rolling gear depends on the design of the available gear grinders and the wheel dressing attachment. At ENIMS, "584" gear grinders have a dressing device with setting cams that permit the wheel profile to be slightly modified. A calculation diagram illustrates the setting of the diamond dressing device of the "584" grinders. A calculation example is included for a case where a gear with 3 mm module and 45 teeth is rolled using a rolling gear with 94 teeth. Involutograms made by an involute meter show the error produced in rolling with a non-corrected and with a corrected wheel. Errors after correction do not exceed 35 μm. Cold sizing reduces errors to 20-25 μm over the working section of the tooth profile. The method of determining the rolling gear modification for the rear tooth flank is analogous with the modification for the front flank and therefore is not included, but it is pointed out that the curve shape and the angle for the front and rear flanks are not alike, and it is recommended not to reverse rolling. There are 9 figures.

Card 2/2

AYZENSHTADT, L.A.; PEN'KOV, P.M.; GLADKOV, B.A.; LIKHT, L.O.; KRIMMER, T.Ye.; KASHEPAV, M.Ya., kand. tekhn. nauk; MERPERT, M.P., kand. tekhn. nauk; KOPERBAKH, B.L.; CHERNIKOV, S.S., kand. tekhn.nauk; BELOV, V.S.; ZHURIN, B.F.; MONAKHOV, G.A., kand.tekhn.nauk; MOROZOV, I.I.; MUSHTAYEV, A.F.; OGNEV, N.N.; PALEY, M.B., kand. tekhn. nauk; FURMAN, D.B.; LIVSHITS, A.L., kand.tekhn.nauk;MECHETNER, B.Kh.;SOSENKO,A.B;AVDULOV, A.N.; LEVIN, A.A., kand.tekhn. nauk; YAKOBSON, M.O., doktor tekhn.nauk; MAYOROVA, E.A., kand.tekhn.nauk; MOROZOVA, Ye.M.; ZUSMAN, V.G., kand.tekhn. nauk; NAYDIS, V.A., kand.tekhn.nauk; VLADZIYEVSKIY, A.P., prof., doktor tekhn. nauk, red.; BELOGUR-YASNOVSKAYA, R.I., red.; CHIGAREVA, E.I., red.; ASVAL'DOV, M.Ya., red.; KOGAN, F.L., tekhn. red.

[Machine-tool industry in capitalist countries] Stanko-stroenie v kapitalisticheskikh stranakh. Pod red. i s predisl. A.P.Vladzievskogo. Moskva, 1962. 822 p. (MIRA 15:7)

1. Moscow. TSentral'nyy institut nauchno-tekhnicheskoy informatsii mashinostroyeniya. 2. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov (for Vladziyevskiy, Belogur-Yasnovskaya, Chigareva, Asval'dov, Kogan).

(Machine-tool industry)

MONAKHOV, G.A.; CHERNIKOV, S.S.

Electric contact servosystem with an automatic regulation of the direction of resulting feed. Stan. i instr. 35 no. 4: 3-7 Ap '64. (MIRA 17:5)

ACC NR: AP7003011 (A) SOURCE CODE: UR/0413/66/000/024/0158/0158

INVENTORS: Chernikov, S. S.; Paley, M. B.; Kosovskiy, V. L.

ORG: none

TITLE: An automatic milling machine. Class 49, No. 150737

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 24, 1966, 158

TOPIC TAGS: metalworking, metalworking machine, milling machine

ABSTRACT: This Author Certificate presents an automatic continuous-action milling machine with an endless chain-driven carrier bed, with carriages for mounting the milled parts and with an immobile milling head. To increase its productivity and secure its safe operation, the chain-driven carrier bed is placed in the vertical plane with the chain following a triangular path. The lateral vertical face of the triangle acts as the working limb of the carrier and is located at the side opposite to the milling head. The upper horizontal side forms the feeding part of the carrier. The endless chain-driven carrier may be mounted on runners moving automatically along the inclined guiding ways in a direction perpendicular to the spindle axis of the milling head.

SUB CODE: 13/ SUBM DATE: 19Feb61

Card 1/1

CHERNIKOV, S.V.

Automatic line for heat treatment of small parts in a protective atmosphere. Priborostroenie no.6:20 Je '64. (MIRA 18:3)

CHERNIKOV, V.

Running start. Izobr.i rats. no.12:38-41 D '60. (MIRA 13:12)

1. Predsedatel' pervichnoy organizatsii Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov sovkhoza "Kommunar."
(Stavropol Territory--Agricultural machinery--Technological innovations)

- VEDERNIKOV, A., starshiy inzhener (Irkutsk); CHERNIKOV, V., aviatekhnik (Irkutsk); GRAYVORONTSEV, I., aviatekhnik (Irkutsk)

Ground workers had to catch up. Grazhd.av. 18 no.11:11 N '61.
(MIRA 15:2)
(Irkutsk--Airports) (Irkutsk--Airplanes--Maintenance and repair)

CHERNIKOV, V. A.

SOLOV'YEV, K. P. and CHERNIKOV, V. A. "Experi nce in the artificial propagation of the spindle tree", Sbornik rabot (Dal'nevost. nauch.-issled. in-t les. khoz-va i lesoeksploatatsii), Issue 1, 1948, p. 131-39, - Bibliog: 5 items.

SO: U-4393, 19 August 53, (Letopis 'Zhurnal 'nykh Statey', No. 22, 1949).

L 00841-67

ACC NR: AR6011097 SOURCE CODE: UR/0272/65/000/011/0098/0098

AUTHORS: Semenenko, V. A.; Chernikov, N. A.; Koshman, V. I.

TITLE: The BP-1 (II or III) arcproof power supply for the SDK-60-I pressure alarm and the UUZhEK-60-I electric marine-type liquid-level indicator

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 11.32.821

REF SOURCE: Sb. nauchn. tr. Gos. in-t po proyektir. i issled. vzryvobezopasn. elektrooborud. Gipronisselektroshakht, vyp. 2, 1964, 56-58

TOPIC TAGS: power supply, parameter, transformer, electric capacitor, resistor, liquid level indicator, pressure measuring instrument/ BP-1 power supply, UUZhEK-60-I liquid level indicator, SDK-60-I pressure measuring instrument

ABSTRACT: The technical characteristics and the electric circuit of the BP-1 power supply are given. It has a power of 10 va and was designed at the Gipronisselektroshakht Institute. The arc protection of each output of the unit is achieved by limiting resistors and shunt capacitors which were experimentally matched for the selected parameters of the transformer. 1 illustration. [Translation of abstract]

SUB CODE: 09

Card 1/1 pb UDC: 389:531.787:681.128

CHERNIKOV, V. A.

Larch

Incluence of forest fires on the regeneration of the larch in the Daurs region. Les. khoz. 4 no. 12, 1951

Monthly List of Russian Accessions, Library of Congress, April 1952. UNCLASSIFIED

MITSUK, V.Ye.; SAVOSKIN, V.I.; CHERNIKOV, V.A.

Measuring the electron concentration in a plasma by the interferometric method using a ruby laser. Zhur. tekh. fiz. 35 no.6:1156-1158 Je '65. (MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, Khar'kov.

CHERNIKOV, V. A.

Larch

Assisting natural regeneration of larch in the Far East. Les. khoz. 5, No. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, September 1952 1953. Unclassified.

CHERNIKOV, V.A.

Konstantin Petrovich Solov'ev; on his 60th birthday. Soob.DVFAN SSSR no.11:165-166 '59. (MIRA 13:11)
(Solov'ev, Konstnatin Petrovich, 1896-)

S/123/62/000/002/001/012
A004/A101

AUTHOR: Chernikov, V. A.

TITLE: Investigating the dependence between the mechanical properties of low-alloy structural steel and its chemical composition

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 2, 1962, 18, abstract 2A106 ("Metallurg. i khim. prom-st' Kazakhstana. Nauchno-tekhn. sb.", 1961, no. 2 (12), 12-19)

TEXT: The author determined by the statistical method the dependence of the strength characteristics of 35ГС (35GS) steel on the changes in the content of C (0.32 - 0.39%), Mn (0.8 - 1.2%) and Si (0.6 - 0.9%). A linear correlation dependence was established between σ_b, σ_s and δ of steel and its content of C, Mn and Si.

[Abstracter's note: Complete translation]

Card 1/1

CHERNIKOV, V.A.

Study of the relationship between the mechanical properties of steel and its composition by the method of methamatical statistics. Zav.lab. 28 no.10:1217-1220 '62. (MIRA 15:10)

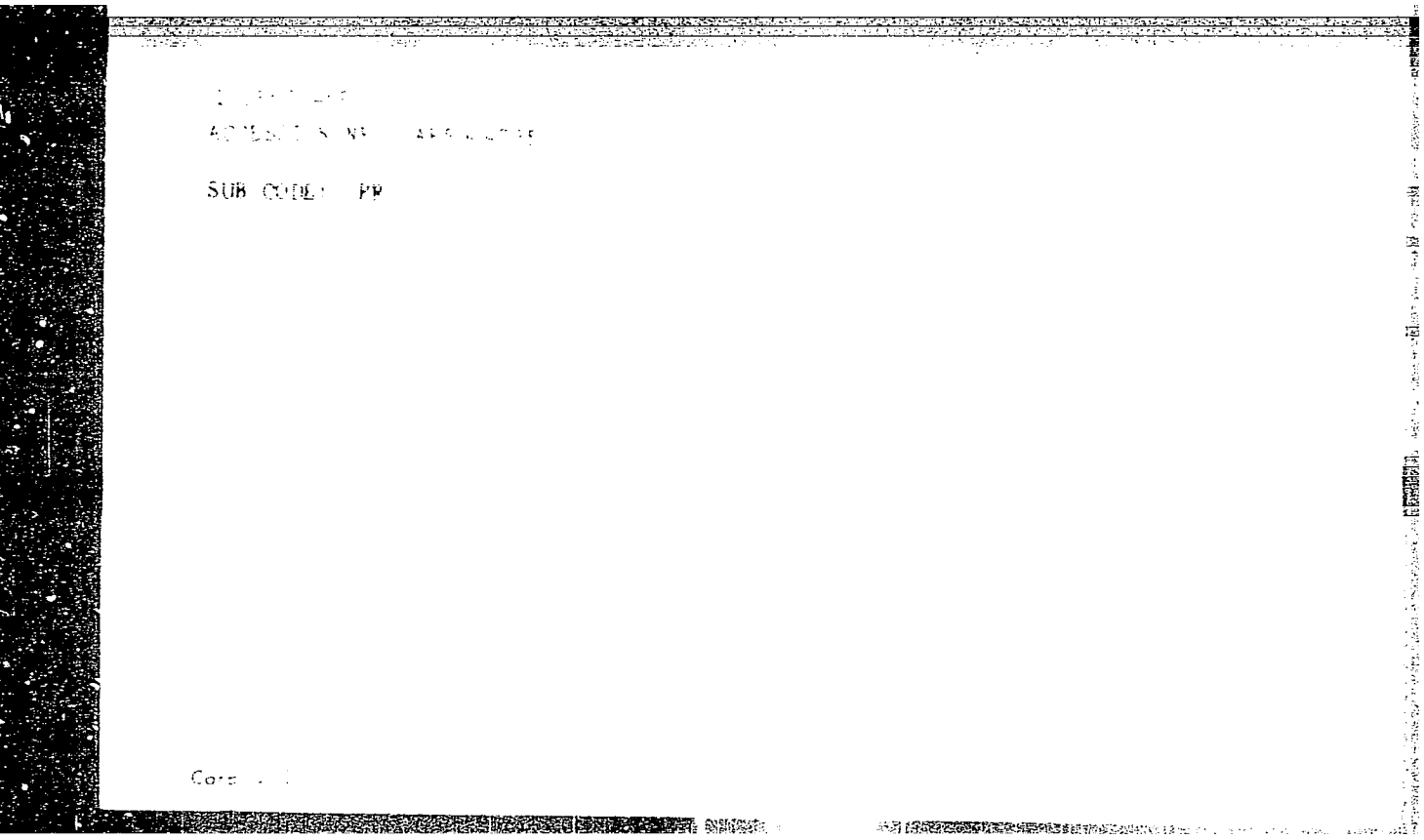
1. Khimiko-metallurgicheskiy institut AN KazSSR.
(Steel—Testing) (Mathematical statistics)

KOTROVSKIY, M.M.; URUMBEGLIK, N.N.; CHERNIKOV, V.A.

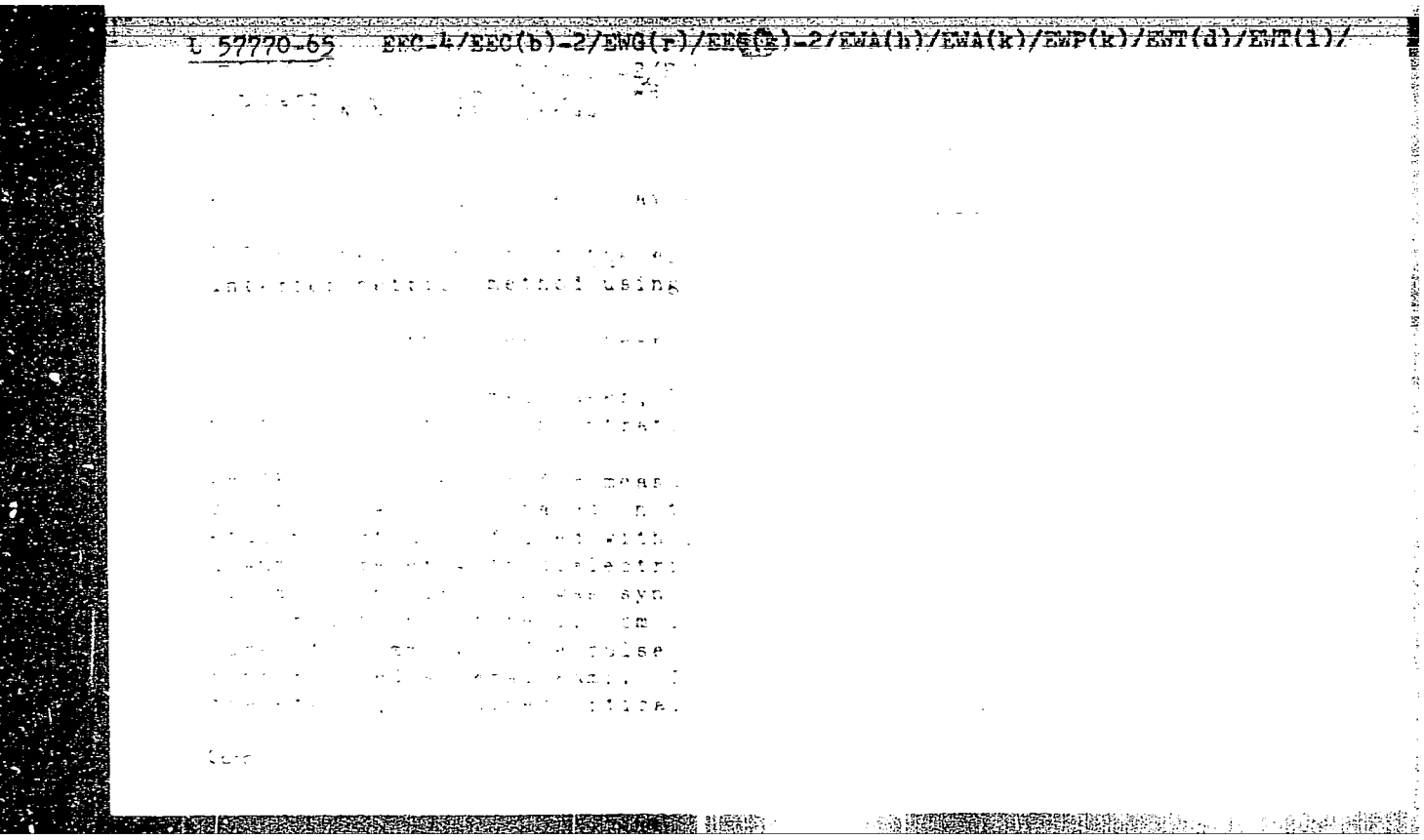
Automation of the sintering process. Metallurg 8 no.6:8-10 Je '63. (MIRA 16:7)

1. Makeyevskiy metallurgicheskiy zavod.
(Sintering) (Automation)

Energomashinostroyeniye, L., 1964, 97-102



SUB CODE: PR



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of the laser beam on the plasm

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L 45818-66 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6031582 SOURCE CODE: UR/0386/66/004/004/0129/0131

AUTHOR: Mitsuk, V. Ye.; Savoskin, V. I.; Chernikov, V. A. 84 B

ORG: Physics Department of the Moscow State University im. M. V. Lomonosov (Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Breakdown at optical frequencies in the presence of diffusion losses

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 4, 1966, 129-131

TOPIC TAGS: laser application, dielectric breakdown, physical diffusion, optic measurement, optic property

ABSTRACT: The authors present results of experiments on breakdown in krypton and xenon at optical frequencies and low pressures. The size of the focusing volume was varied in order to clarify the role of diffusion during breakdown. A ruby laser was used, operating in the single-pulse mode (60 nsec and ~0.5 J). The laser parameters were measured directly during the time of the experiment. Lenses, corrected for aberration, focused the laser beam inside a glass vacuum chamber containing the investigated gas at a fixed pressure. The occurrence of the discharge was monitored visually and by a photoelectric method. The obtained pressure dependence of the light-wave threshold electric field intensity in krypton and xenon is in good qualitative agreement with calculations based on the avalanche theory without account of losses. However, the experimental values of the threshold electric-field intensity were higher

Card 1/2

ACC NR: AP6031582

than the theoretical ones in the entire region of the investigated pressures, the difference increasing with decreasing pressure; this can apparently be attributed to the increase in the role of diffusion loss with decreasing pressure. To obtain more details on the role of the diffusion losses, the threshold field intensity was measured with focusing lenses having different focal distances (from 18 to 180 mm). These results show conclusively that in breakdown at optical frequencies, at pressures below atmospheric, diffusion electron losses play an important role during the stage of development of the electron avalanche, and lead to an increase of the threshold field intensity. Other types of losses (recombination and elastic losses) are insignificant under these conditions. Allowance for the diffusion losses, made under the assumption that the diffusion of the electrons from the focusing volume is free and that an important role is played in the investigated gases by slow-electron diffusion due to the Ramsauer effect, gives good agreement between the experimental results and the avalanche theory. Orig. art. has: 3 figures and 1 formula. [02]

SUB CODE: 20/ SUBM DATE: 31May66/ ORIG REF: 001/ OTH REF: 001/ ATD PRESS: 5083

Card 2/2

CHERNIKOV, V.F., aspirant

Establishment of a vertical control net for observing the settling of industrial structures. Izv. vys. ucheb. zav.; geod. i aerof. no.5:89-94 '63. (MIRA 17:8)

1. Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.

CHERNIKOV, V.F., aspirant

Observing the settling of industrial structures by hydrostatic leveling. Izv. vys. ucheb. zav.; geod. i aerof. no.2:70-77 '64. (MIRA 17:9)

1. Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.

CHERNIKOV V.G.

99-58-2-5/9

AUTHORS: Chernikov, V.G., Candidate of Technical Sciences, Kim, A.I., Engineer

TITLE: PR-5 — A Device for Surface Levelling of Irrigated Land (PR-5 - orudiye dlya poverkhnostnogo vyravnivaniya oroshayemykh ploshchadey)

PERIODICAL: Gidrotekhnika i Melioratsiya, 1958, # 2, pp 37-43 (USSR)

ABSTRACT: All irrigated fields, even after having been levelled previously, have to be floated again before seeding. At least 8 working days are needed to level 1 ha of land by the conventional method. Many types of mechanical devices are actually in use to increase the efficiency of land floating. The authors describe some of these floats and especially the type "PR-5", which is used in cotton growing areas. It can level 2.13 ha in 1 hour. Special tests have proved the superiority of this type.

There are 3 tables, 1 figure, 1 photo and 8 graphs.

AVAILABLE: Library of Congress

Card 1/1

CHERNIKOV, V.L. (Leningrad)

Determination of dynamic characteristics of automatic control systems. Izv. AN SSSR. Tekh. kib. no.4:170-175 Jl-Ag '64. (MIRA 17:12)

CHERNIKOV, V. S.; UKITSKAYA, V. M.

Engr., Dnepropetrovsk Affiliate, State Planning Inst. for Metallurgical Plants, -c1948-.

"Utilization of steel to replace the cast-iron charging boxes of casting machines," Stal', No. 7, 1948

KLEBANER, Vladimir Yakovlevich; CHERNIKOV, Vladimir Sergeyevich; LIPNITSKIY, A.M., red.; ALABYSHEVA, N.A., red.izd-va; GVIRTS, V.L., tekhn. red.

[Mechanizing the wooden patternmaking processes; practices of the Neva Machinery Manufacturing Plant] Mekhanizatsiia derevomodel'nogo proizvodstva; opyt Nevskogo mashinostroitel'nogo zavoda im. V.I.Lenina. Leningrad, 1963. 13 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Liteinoe proizvodstvo, no.3) (MIRA 17:1)

MOSKOVCHENKO, Boris Petrovich; CHERNIKOV, V.S., red.

[Drying of buildings; practices of the Main Construction Administration of the City of Leningrad] Sushka zdanii; iz opyta Glavleningradstroia. Leningrad, 1964. 32 p. (MIRA 18:2)

CHERNIKOV, V.V.

Schlicht functions with real coefficients. Uch.zap.TGU no.36:3-12 '60. (MIRA 14:5)

(Functions of complex variables)

S/199/63/004/002/001/013
B172/B186

AUTHORS: Aleksandrov, I. A., and Chernikov, V. V.

TITLE: Extremum properties of star-shaped mappings

PERIODICAL: Sibirskiy matematicheskiy zhurnal, v. 4, no. 2, 1963, 241-267

TEXT: $J = J(t_1, t_2, \ldots, t_{(2n+2)k})$ denotes an analytic function of the complex variables t_j for the semi-cylinder $|t_j| < \infty$, $j = 1,2,\ldots,(2n+2)k$. Functionals of the shape $J = J(u_{01}, v_{01}, u_{11}, v_{11}, \ldots, u_{n1}, v_{n1}; u_{02}, v_{02}, u_{12}, v_{12}, \ldots, u_{n2}, v_{n2}; \ldots; u_{0m}, v_{0m}, u_{1m}, v_{1m}, \ldots, u_{nm}, v_{nm})$ are considered over certain function classes M, where

$$f^{(s)}(w_k) = u_{sk}, \quad \overline{f^{(s)}(w_k)} = v_{sk}; \quad f^0(w_t) = f(w_k);$$

$w_1, \ldots w_m$ being points of the domain G in which the functions of the class M are regular. E.g., $M = S_p^*$ $(p = 1,2,\ldots)$; S_p^* consists of functions

$$z = f(w) = w + c_{p+1}w^{p+1} + \ldots + c_{kp+1}w^{kp+1} + \ldots,$$

Card 1/2

Extremum properties of...

regular and unique in the circle W : $|w|<1$, which map W on domains that are star-shaped with respect to z = 0 and have a p-fold rotational symmetry with respect to z=0. The aim of this paper is to make statements on the range of values D of a functional J over M. If a point of the contour D corresponds to a function $f(w)\in M$, the latter is called contour function. Furthermore it is shown what shape the contour functions have for the class of functions considered. A number of theorems are given on the special functionals $J = \ln \frac{f(w)}{w}$ and $J = \frac{wf'(w)}{f(w)}$, and also estimates for the coefficients of functions of the classes S_p and K_p.

SUBMITTED: June 22, 1961

Card 2/2

ALEKSANDROV, I.A.; CHERNIKOV, V.V.

Extremum properties of one-sheeted star-shaped mappings. Sib.mat. zhur.4 no.6:1201-1207 N-D '63. (MIRA 17:9)

L 19571-65 EWT(d) IJP(c)/AFWL/ASD(a)-5

AUTHOR: Chernikov, V. V.

TITLE: Single-sheeted functions with

[illegible] Izvestiya. Ser

ABSTRACT: This paper was announced
functions of a complex variable, Se
variational method to study the prob

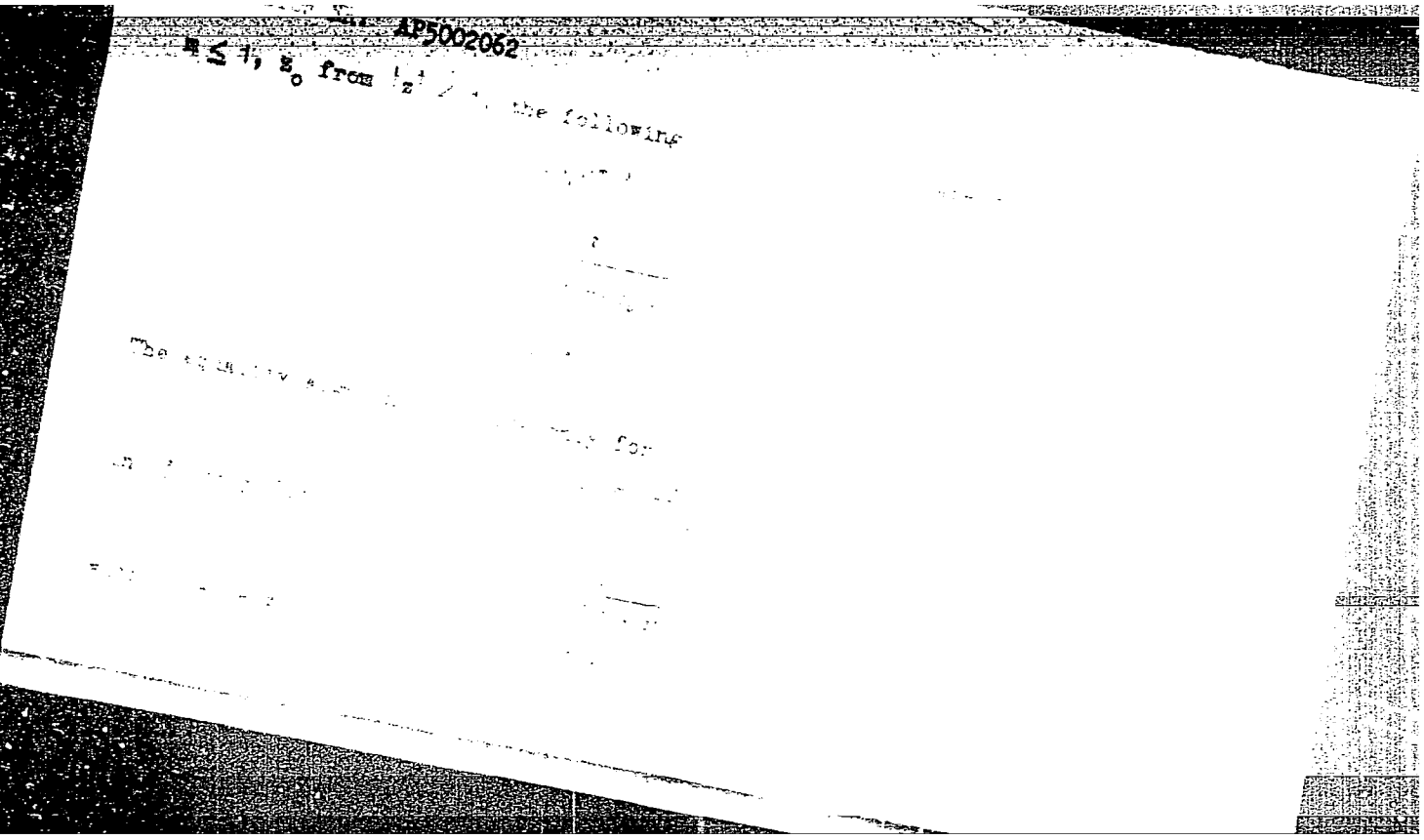
$$J_1 =$$

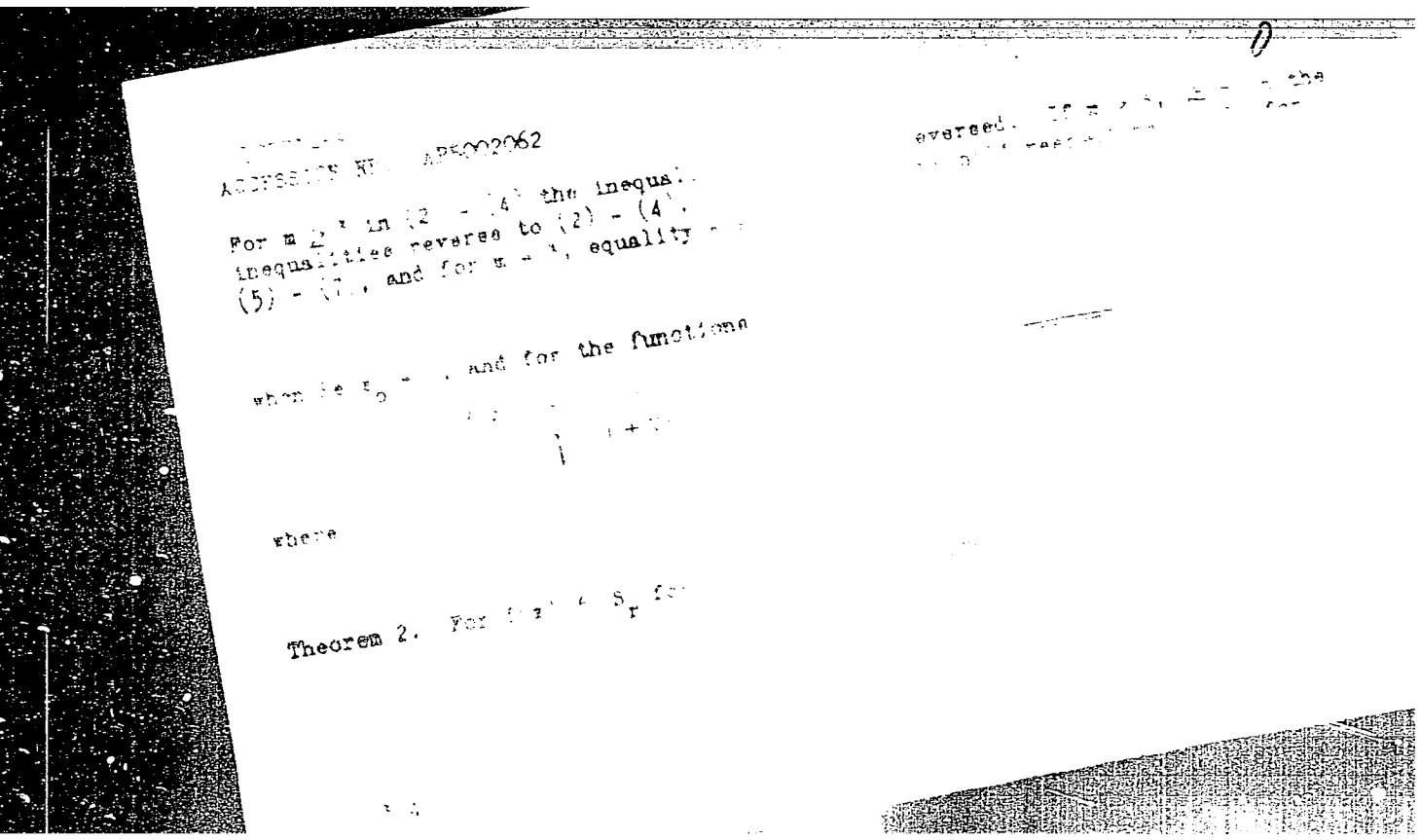
for given ... real m, and

... of the class

holomorphic and single-sheeted in

Card 1/4





L 19571-65
ACCESSION NR: AP5002062

ASSOCIATION: [illegible]
State University

L 30789-66 EWT(d) IJP(c)

ACC NR: AP6022095 SOURCE CODE: UR/0199/66/007/001/0200/0205

AUTHOR: Chernikov, V. V.

ORG: none

TITLE: Domain of a functional in the class of bounded Schlicht functions with real coefficients

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 7, no. 1, 1966, 200-205

TOPIC TAGS: functional equation, bounded function, polynomial equation, uniqueness, class theory

ABSTRACT: Consider the class S'_r of functions

$$w = f(z) = c_1 z + c_2 z^2 + \ldots + c_k z^k + \ldots \qquad (1)$$

that are schlicht and holomorphic in the circle E: $|z|<1$, have real coefficients, $c_1 < 0$, and map E into itself. Consider the functional (of S'_r)

$$J = c_1 + ic_3, \qquad (2)$$

with $f(z) = 0$ adjoined to S'_r. The extended class is compact, and

Card 1/2 UDC: 517.53

L 30789-66

ACC NR: AP6022095

the bounded set D of values of functional (2), called the range of (2), is closed and connected.

Theorem: The range of (2) on S_r' is bounded by

$$c_1 = te^{-t}, \quad c_3 = te^{-3t}(2 - 4t + t^2 + e^{2t}), \quad 0 < t < 1, \tag{4}$$

$$c_3 = c_1 - c_1^3, \quad e^{-1} \leqslant c_1 \leqslant 1, \tag{5}$$

$$c_3 = -c_1 + c_1^3, \quad 0 \leqslant c_1 \leqslant 1. \tag{6}$$

The points $c_1 = e^{-1}$ and $c_3 = e^{-1} - e^{-3}$ are singular.

Orig. art. has: 1 figure and 40 formulas. [JPRS]

SUB CODE: 12 / SUBM DATE: 02Feb65 / ORIG REF: 004

Card 2/2

ACC NR: AR6027455 SOURCE CODE: UR/0044/66/000/005/B023/B023

AUTHOR: Chernikov, V. V.

TITLE: An extremal problem in the class of bounded functions with real coefficients

SOURCE: Ref. zh. Matematika, Abs. 5B97

REF SOURCE: Dokl. 3-y Sibirsk. konferentsii po matem. i mekhan., 1964. Tomsk, Tomskiy un-t, 1964, 76

TOPIC TAGS: functional equation, variational problem

ABSTRACT: The problem of determination of extremal values of the functional

$$I = \mathrm{Re}\left[e^{i\theta} \ln \frac{w_0^m f'(w_0)}{f^m(w_0)}\right],$$

has been investigated for the functional prescribed for a class of regular and single-leaf (within the circle $|w| < 1$) functions $f(w) = c_1 w + c_2 w^2 + \ldots$, $|f(w)| < 1$ (within the circle $|w| < 1$, $c_1 > 0$, c_2, c_3, ...) are real; w_0, $|w_0| < 1$, is specified, and m, θ are assigned real numbers. The following results are given without proof. In the general case the shape of the region is presented over which the extremal functions project the circle $|w| < 1$. For $\theta = 0$, $m < 1$ the form of all functions which realize the maximum of the studied functional are indicated. For $\theta = 0$, $m = 1$ explicit exact

Card 1/2 UDC: 517.54

ACC NR: AR6027455

upper estimates of the functional I are found and all the extremal functions are presented. The investigation is carried out by the variational method. [Translation of abstract] G. Kuz'mina

SUB CODE: 12

Card 2/2

CHERNIKOV, V.Ye., inzh.

Construction of the main units of thermal electric power plants on foundations from pile casings. Energ. stroi no.39:13-20 '64. (MIRA 17:11)

ACCESSION NR: AT4016600 S/2556/63/000/034/0034/0036

AUTHOR: Chernikov, Yu. A.

TITLE: A map of solar gravity eclipses on the nighttime side of the earth

SOURCE: Vsesoyuznoye astronomo-geodezicheskoye obshchestvo. Byulleten', no. 34, 1963, 34-36

TOPIC TAGS: astronomy, solar eclipse, sun, gravity, gravity screening, gravity eclipse

ABSTRACT: A number of studies recently have appeared describing attempts to detect gravity screening at the time of solar eclipses. Such attempts, which have yielded contradictory results, have thus far been made only on the daytime side of the earth, in zones of a visible solar eclipse. A central solar gravity eclipse occurs on the earth simultaneously at two points, one on the daytime side, one on the nighttime side. If gravity screening is a reality it also can be detected on the nighttime side. Experiments on the nighttime side would double the opportunities of detecting the effect. No daytime eclipse will occur in the USSR until 1976; in that period there will be three nighttime opportunities in the USSR to investigate the postulated effect. There is no need to know all the characteristics of the solar eclipse for this purpose, only the curve of the central gravity eclipse. The nighttime branches of the curves of a central gravity eclipse for all solar gravity eclipses for the

Card 1/2

ACCESSION NR: AT4016600

world up to 1977 have been computed and plotted on a map (Enclosure). Between 1962 and 1977 there are 22 such events, but two occurring in the polar regions are not plotted. The map shows where and when experimental observations can be set up to determine the reality of gravity screening. "The author expresses appreciation to Professor V. Radziyevskiy for proposing the idea of this paper and assistance in writing the text". Orig. art. has: 1 figure.

ASSOCIATION: Yaroslavskiy gosudarstvenny~~y~~ pedagogicheskiy institut imeni K. D. Ushinskogo (Yaroslav State Teachers Institute)

SUBMITTED: 00Sep62 DATE ACQ: 24Feb64 ENCL: 01

SUB CODE: AS NO REF SOV: 004 OTHER: 001

Card 2/3

S/137/62/000/003/178/191
A160/A101

AUTHORS: Chernikov, Yu. A.; Dobkina, B. M.; Tramm, R. S.; Pevzner, K. S.

TITLE: Determining tantalum and niobium in mineral raw materials by colorimetric analysis

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 2 - 3, abstract 3 K8 ("Khim., fiz., khim. i spektr. metody issled. rud redk. i rasseyan. elementov", Moscow, Gosgeoltekhizdat, 1961, 108 - 115)

TEXT: Conditions have been developed required for determining Ta in columbite and tantalite concentrates containing Nb $\leq$ 48 % and Ta $\leq$ 50 %. For eliminating the effect of Ti, an appropriate amount of it is introduced into the index solutions. When Ta is analyzed by the photometric means within the visible region of spectrum, Ti is separated-off in advance, by using tannin. The photometric analysis of Ta is carried out at 325 mμ right after the fusion of the assay with K pyrosulfate and leaching of the melt with an $(NH_4)_2C_2O_4$ solution, without separating it in advance, from other elements. The presence of < 30γ Ti does not hinder the determination of Ta. The photometric analysis of Ta is performed on Specker's colorimeter within a concentration range of 0.4 - 0.7 mg/

Card 1/2

Determining tantalum and niobium ...

/ml Ta, the error being ~ 2% (rel.). Nb in the form of its rodanide complex is analyzed by photometric means in acetone, at 390 mμ. A tenfold amount of Ti, in this case, produces an error not over + 3.5 % (rel.). Best reproducible results can be obtained when Nb concentration amounts to 0.015 - 0.03 mg/ml, and also when reagents have the following concentrations: tartaric acid 0.04 M, sulfates 0.002 M, HCl 2.7 M, rodanide 0.3 M, (or 0.6 M, if Ti is present in a moderate amount). Reagents are added to the analyzed solution in the following sequence: tartaric acid, - $SnCl_2$ solution, - rodanide solution, - HCl, - acetone. There are 21 references.

B. Melent'yev

[Abstracter's note: Complete translation]

Card 2/2

KAGAL'NIKOVA, T.I.; RADZIYEVSKIY, V.V.; CHERNIKOV, Yu.A.; CHERNYSHOV, V.I.; SHUVALOV, V.V.

Observation of the gravity effect of the solar eclipse of February 15, 1961 in Yaroslavl. Biul. VAGO no.31:15-17 '62. (MIRA 16:4)

1. Yaroslavskiy gosudarstvennyy pedagogicheskiy institut imeni K.D. Ushinskogo i Yaroslavskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo obshchestva.
(Yaroslavl—Eclipses, Solar) (Gravity)

MUSTAFAYEV, B.R.; TARANOV, Z.Ye.; CHERNIKOV, Yu.V.

New method for manufacturing bronze bushings.
Sbor.rats.predl.vnedr.v proizv. no.1:19 '61. (MIRA 14:7)

1. Azerbaydzhanskiy truboprokatnyy zavod.
(Founding)

CHERNIKOVA, A.P.; PODRABINIK, G.M.

Certain characteristics of liver function in dysentary in children. Pediatriia, Moskva No.3:32-34 May-June 51. (CIML 21:4)

1. Of the Clinic for Acute Children's Infections and of the Biochemical Laboratory (Head--Doctor Medical Sciences A.N. Kvyatkovskaya), Central Scientific-Research Pediatric Institute of the Ministry of Public Health RSFSR (Director--Prof. S.P. Borisov).

VISHNEVETSKAYA, L.O., doktor meditsinskikh nauk; CHERNIKOVA, A.P.

Pathogenesis of secondary toxicoses in dysentery in infants. Pediatriia no.2:28-32 Mr-Ap '55. (MLRA 8:8)

1. Iz Nauchno-issledovatel'skogo pediatricheskogo instituta Ministestva zdravookhraneniya RSFSR (dir. V.N. Karachevtseva)
(DYSENTERY, BACILLARY, in infant and child, with toxicosis)
(INFANT NUTRITION DISORDERS, toxicosis in dysentery)

OZERETSKOVSKAYA, N.E.: CHERNIKOVA, A.P.

Application of methionine in the treatment of hypotrophy in young children following dysentery. Pediatriia no.2:32-36 Mr-Ap '55. (MLRA 8:8)

1. Iz otdela ostrykh infektsiy (zav.-prof. G.B. Shirvindt) Nauchno-issledovatel'skogo pediatricheskogo instituta (dir. V.N. Karachevtseva)

(DYSENTERY, BACILLARY, in infant and child, with inf.nutrition disord. ther., methionine)
(METHIONINE, therapeutic use, inf. nutrition disord. in dysentery)
(INFANT NUTRITION DISORDERS, therapy methienine, in dysentery)

CHERNIKOVA, A.P.

Genesis of secondary toxicoses during disentery in infants. Vop. okh.mat. i det. 1 no.2:34-39 Mr-Ap '56. (MLRA 9:9)

1. Iz infektsionnoy kliniki (zav.-prof. B.G.Shirvindt) Gosudarstvennogo nauchno-issledovatel'skogo pediatricheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. V.N.Karachevtseva) Moskva.
(INFANTS--DISEASES) (DISENTERY)

OZERETSKOVSKAYA, N.Ye., doktor meditsinskikh nauk; CHERNIKOVA, A.P., kandidat meditsinskikh nauk

Adrenaline metabolism in children ill wtih dysentery. Vop.okh.mat. i det. 1 no.4:56-62 Jl-Ag '56. (MLRA 9:9)

1. Iz otdela infektsionnykh bolezney (zav. - prof. B.G.Shirvindt) i biokhimicheskoy laboratorii Gosudarstvennogo nauchno-issledovatel'skogo pediatricheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. V.N.Karachevtseva) Moskva.
(DYSENTERY) (ADRENALINE)

CHERNIKOVA, A. P.: Doc Med Sci (diss) -- "The clinical-pathogenetic characteristics of secondary toxicoses in dysentery of young children". Moscow, 1958. 16 pp (Min Health USSR, Central Inst for the Advanced Training of Physicians), 250 copies (KL, No 1, 1959, 122)

CHERNIKOVA, A.P., doktor med.nauk

Dysentery in children. Zdorov'e 8 no.5:22-23 My '62. (MIRA 15:5)
(DYSENTERY)

30915
S/192/61/002/006/002/004
D228/D304

24.7900 (1055, 1144, 1163)

AUTHORS: Lebedev, Ya. S., Chernikova, D. M., and Tikhomirova, N. N.

TITLE: Computing the spectra of electron paramagnetic resonance on an electronic calculating machine. 1. EPR spectra with an ultrafine structure (symmetrical components)

PERIODICAL: Zhurnal strukturnoy khimii, v. 2, no. 6, 1961, 690-695

TEXT: The authors computed theoretical EPR spectra with an ultrafine structure by means of a high-speed calculating machine at different ratios of individual component widths to the resolution magnitude. Special attention was paid to the area beneath the absorption curve, the number of components and the intensity correlations, the line widths in the spectra, and the form of individual lines. Previous work shows that determining these parameters is

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Computing the spectra of ...

impeded by the spectrum's distorted form, and that the line form can only be mathematically analyzed, when laborious calculations are necessary, in the simplest of cases-singlet and doublet lines. Graphs of theoretical spectra were plotted both for cases of equal component intensity and for those of the binomial distribution of intensities (1:2:1, 1:3:3:1, 1:4:6:4:1). The Gauss and Lorentz forms of individual component lines were calculated from the equation

$$I(x) = \sum_{k=1}^{n} a_k f\left[\frac{x - k + 1}{\beta}\right]$$

where n = the number of UFS components, a_k = the coefficients of intensity, k = the ordinal number of UFS components, f (x) = $(1 + 1.335x^2/\beta^2)^{-1}$ and $\exp(-2x^2/\beta^2)$ for the Lorentz and Gauss

Card 2/4

Computing the spectra of ...

forms respectively, $\beta = \Delta H_1/\Delta H_r$, $x = H - H_o/\Delta H_r$, ΔH_r = the resolution between the UFS components, ΔH_1 = the width of individual lines between the points of maximum inclination, H_o = the field corresponding to the center of the end component, and H = the magnetic field's alternating value. Two methods are proposed for examining experimental spectra: The direct comparison of observed and theoretical spectra, and the use of nomograms for analyzing unresolved EPR spectra. In the latter the true values of $\beta = \Delta H_1/\Delta H_r$ are plotted along the x-axis and $\Delta H^*_s/\Delta H_r$, $\Delta H_1/\Delta H_r$, $\Delta H^*_{r(k-1)}/\Delta H_r$, and I'_k/I'_1 along the y-axis; k and 1 are the component numbers, I'_k and I'_1 being the amplitudes of components k and 1 recorded in a first derivative form. The combination of both methods allows the parameters of unresolved spectra to be determined with sufficient accuracy when both the spectrum structure and ΔH_r are known, or when only one of these quantities is known. The desired parameters can apparently be evaluated even if there is absolutely no information about a partially

IV

Card 3/4

Computing the spectra of ...

resolved spectrum. Thus, the authors conclude that the foregoing procedure will enable different EPR spectra to be satisfactorily deciphered and processed which in turn will increase the possibility of applying the EPR method to solving scientific problems. Due acknowledgement is made to V. V. Voyevodskiy, A. Ya. Povzner, and others on the staff of the Matematicheskiy otdel IKhF AN SSSR Mathematics Section, Institute of Chemical Physics, Academy of Sciences, USSR) for their advice and interest. There are figures, 1 table, and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publications read as follows: J. G. Powles et al, Proc. Phys. Soc. 77, 729 (1959); W. Gordy et al, Proc. Nat. Acad. Sci. USA 46, 1124 (1961); D. Libby et al, J. Phys. Chem. Solids 18, 316 (1961).

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR)

SUBMITTED: July 7, 1961

Card 4/4

38502

S/192/62/003/003/003/006
D228/D307

11.4400

AUTHORS: Tikhomirova, N. N. and Chernikova, D. M.

TITLE: Electron paramagnetic resonance spectra of solid phthalocyanines

PERIODICAL: Zhurnal strukturnoy khimii, v.3, no. 3, 1962, 335-337

TEXT: The authors give the results of their investigation of the electron paramagnetic resonance spectra of phthalocyanin and its Co, Cu, Fe, Mg, and Ni salts. Save for the Co salt, all the studied compounds show electron paramagnetic resonance signals with a g-factor, varying from 2.0 to 3.6. The temperature relationship of these signals is described by Curie's law. The narrow electron paramagnetic resonance lines are caused by a structural effect, related to both the characteristics of the molecules and the manner in which they are packed in the crystal. Reference is made to similar research, recently performed by Neiman and Kivelson, and to more general work by L. A. Blyumenfel'd and V. A. Benderskiy. There is 1 figure. The most important English-language reference reads as

Card 1/2

follows: R. Neiman, D. Kivelson, J. Chem. Phys., 35, 162, 1961.

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Institute of Chemical Physics, Academy of Sciences, USSR)

SUBMITTED: January 5, 1962

Card 2/2

LEBEDEV, Ya.S.; CHERNIKOVA, D.M.; TIKHOMIROVA, N.N.; VOYEVODSKIY, V.V., otv. red.; BUTOMO,N.N., red.izd-va; SIMKINA, G.S., tekhn. red.; POLENOVO, T.P., tekhn. red.

[Atlas of electron paramagnetic resonance spectra; theoretically computet multicomponent symmetric spectra]Atlas spektrov elektronnogo paramagnitnogo rezonansa; teoreticheski rasschitannye mnogokomponentnye simmetricheskie spektry. Moskva, Izd-vo Akad. nauk SSSR, 1962. 228 p. (MIRA 15:12)

1. Akademiya nauk SSSR. Institut khimicheskoy fiziki. 2. Laboratoriya khimicheskoy radiospektroskopii Instituta khimicheskoy fiziki Akademii nauk SSSR (for Lebedev, Chernikova, Tikhomirova).
(Paramagnetic resonance and relaxation—Spectra)

KHALATNIKOV, I.M.; CHERNIKOVA, D.M.

Sound dispersion in superfluid helium. Pis'. v red. Zhur. eksper. i teoret. fiz. 2 no.12:566-572 D '65. (MIRA 19:1)

1. Institut teoreticheskoy fiziki AN SSSR. Submitted Nov. 9, 1965.

KHALATNIKOV, I.M.; CHERNIKOVA, D.M.

Relaxation phenomena in superfluid helium. Zhur.eksp. i teor. fiz. 49 no.6:1957-1972 D '65.

(MIRA 19:1)

1. Institut teoreticheskoy fiziki AN SSSR. Submitted July 26, 1965.

ACCESSION NR: AP4025946 S/0056/64/046/003/1123/1125

AUTHORS: Sanikidze, D. G.; Chernikova, D. M.

TITLE: Fourth sound in a He-3 He-4 solution

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 1123-1125

TOPIC TAGS: fourth sound, helium 3, helium 4, helium 3 helium 4 solution, superfluidity, superfluid component, normal component, energy gap

ABSTRACT: The propagation of waves in which only the superfluid part of the liquid vibrates (fourth sound) in helium II alone was considered by Atkins (Phys. Rev. v. 113, 962, 1959), and was recently observed experimentally. The article deals with the possibility of observing fourth sound in a solution of He^3--He^4 under the conditions when the normal component of the liquid is prevented from oscillat-

Card 1/4

ing. The hydrodynamic equations for the propagation of sound in the solution are written out and are transformed into a system of algebraic equations which yield for the velocity of the fourth sound

$$u_4^2 = \frac{\rho_s}{\rho}\left(\frac{\partial p}{\partial \rho}\right)_{\sigma,c}\left[1+\frac{c}{\rho}\left(\frac{\partial \rho}{\partial c}\right)_{p,T}\right]^2 + \frac{\rho_s}{\rho}\left\{\bar{\sigma}^2\left(\frac{\partial T}{\partial \sigma}\right)_{\rho,c} + \right.$$

$$\left. + c^2\left[\frac{\partial}{\partial c}\left(\frac{Z}{\rho}\right)_{p,T}\right]\right\} - 2\frac{\rho_s}{\rho}\alpha\bar{\sigma}\left(\frac{\partial p}{\partial \rho}\right)_{T,c}\left(\frac{\partial T}{\partial \sigma}\right)_{\rho,c}\left[1+\frac{c}{\rho}\left(\frac{\partial \rho}{\partial c}\right)_{p,T}\right],$$

$$\bar{\sigma} = \sigma - c\,(\partial\sigma/\partial c)_{p,T}, \qquad \alpha = -\rho^{-1}\,(\partial\rho/\partial T)_{p,c}.$$

(the symbols are standard). For low helium concentration this yields

$$u_4^2 = \frac{\rho_0}{\rho}\frac{\partial p}{\partial \rho}\left[1 + 2\frac{c}{\rho}\frac{\partial \rho}{\partial c} - 2\alpha\frac{\partial T}{\partial \sigma}\left(1 + \frac{c}{\rho}\frac{\partial \rho}{\partial c}\right)\left(\sigma_{40} + \frac{kc}{m_3}\right)\right] +$$

$$+ \frac{\rho_0}{\rho}\left[\frac{\partial T}{\partial \sigma}\left(\sigma_{40} + \frac{kc}{m_3}\right)^2 + \frac{kTc}{m_3}\right] =$$

$$= \frac{\rho_0}{\rho}\left[1 + 2\frac{c}{\rho}\frac{\partial \rho}{\partial c} - 2\alpha\frac{\partial T}{\partial \sigma}\left(1 + \frac{c}{\rho}\frac{\partial \rho}{\partial c}\right)\left(\sigma_{40} + \frac{kc}{m_3}\right)\right]u_1^2 + \frac{\rho_n}{\rho}u_2^2,$$

where σ_{40} -- entropy of pure He^4 and M_3 -- mass of He^3 atom (other symbols are standard). Thus the velocity of fourth sound is expressed in terms of the velocities of first and second sound and, in view of the smallness of the latter, it is essentially proportional to the velocity of first sound. Measurement of the velocity of fourth sound makes it possible to study the behavior of He^3 atoms in HeII and determine the ratio of the superfluid to normal density components in narrow slots, capillaries, and porous substances impregnated with liquid helium. "The authors are grateful to Professor

ACCESSION NR: AP4025946

I. M. Lifshitz and Professor I. M. Khalatnikov for valuable discussions." Orig. art. has: 10 formulas.

ASSOCIATION: Institut Kibernetiki AN GruzSSR (Institute of Cybernetics AN GruzSSR)

SUBMITTED: 25Sep63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 000 OTHER: 003

Card 4/4

ACCESSION NR: AP4043628 S/0056/64/047/002/0537/0542

AUTHOR: Chernikova, D. M.

TITLE: Reflection and transformation of sound waves incident on the interface between liquid He II and its vapor

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 537-542

TOPIC TAGS: second sound, wave reflection, wave transmission, liquid helium system, interface

ABSTRACT: This type of wave reflection is of interest because instead of there being only a reflected and refracted wave in addition to the incident wave, in the case of HeII and its vapor the incident wave gives rise not to two but to three waves, connected with the existence of first and second sound in HeII. The analysis is limited to sound waves in which all the thermodynamic quantities are exponential in time and in space, and in which the mean free path

Card 1/3

ACCESSION NR: AP4043628

of the molecules of the vapir, and also of the elementary excitations in HeII, is much smaller than the length of the sound waves. The general form of the boundary conditions is ascertained and the coefficients of transformation and reflection of the sound waves are determined. It is shown that the second sound and the sound propagating in the vapor are noticeably transformed into each other, whereas hardly any transformation occurs between the first and second sounds or into sound in vapor, or between second sound and sound in vapor and first sound. This means that the first sound incident on the boundary between HeII and its vapor is practically completely reflected. The conditions under which total internal reflection takes place are evaluated. "I thank Professor I. M. Khalatnikov for a discussion of the work and for valuable advice." Orig. art. has: 4 figures and 11 formulas.

ASSOCIATION: Moskovskiy fiziko-tekhnicheskiy institut (Moscow Physicotechnical Institute)

ACCESSION NR: AP4043628

SUBMITTED: 10Jan64 ENCL: 00

SUB CODE: GP NR REF SOV: 001 OTHER: 002

Card 3/3

SEIDOV, N.M.; BAKHSHI-ZADE, A.A.; CHERNIKOVA, I.M.; MELIKOVA, Z.M.

Transformations of α-methylstyrene on aluminosilicates. Azerb.-khim.zhur. no.5:57-62 '62. (MIRA 16:5)
(Styrene) (Aluminosilicates)

5

L 13134-66 EWT(l)/EWT(m)/EPF(n)-2/EWP(t)/EWP(b)/ETC(m) IJP(c) JD/WW/GG

ACC NR: AP6002663 SOURCE CODE: UR/0386/65/002/012/0566/0572

AUTHOR: Khalatnikov, I. M.; Chernikova, D. M.

ORG: Institute of Theoretical Physics, Academy of Sciences SSSR (Institute theoreticheskoy fiziki Akademii nauk SSSR)

TITLE: Dispersion of sound in superfluid helium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 12, 1965, 566-572

TOPIC TAGS: helium, superfluidity, sound propagation, cryogenics

ABSTRACT: After showing that it is possible to separate from the system of equations describing the propagation of sound oscillations in helium II, and described by them earlier (ZhETF v. 49, No. 12, 1957, 1965 and v. 50, No. 2, 1966, in press), two pairs of equations describing propagation of first and second sound respectively, they proceed to compare their earlier results with the latest measurements of the absorption coeffecient of second sound by W. A. Jeffers and W. M. Whitney (Phys. Rev. v. 139, 1082, 1965) and C. E. Chase (Ph.D. Thesis, Cambridge University, 1954, unpublished). They show that the temperature dependences of the first-sound absorption coefficient calculated with their formulas for 1, 2.02, 3.91, and

Card 1/2

L 13134-66

ACC NR: AP6002663

3

6.08 Mc agree well with the experimental data. It is also pointed out that one of the authors' earlier investigation of the absorption of first sound at high frequencies (Khalatnikov, ZhETF v. 20, 243, 1950) was based on the assumption that the relative rate of establishment of equilibrium in the number of phonons and rotons is slow. No such situation is established in superfluid helium at the temperatures of greatest interest (below 1.2K), and occurs only at higher temperatures. Authors thank R. G. Mints, V. N. Sazonov, and D. Semiz for help during the numerical calculations. Orig. art. has: 1 figure and 6 formulas.

SUB CODE: 20/ SUBM DATE: 09Nov65/ ORIG REF: 004/ OTH REF: 001

Card 2/2 HW

L 25706-66 EWT(l)/EWT(m)/EEC(k)-2/EPF(n)-2/T/EWP(k)/ETC(m)-6 IJP(c) WG/JD/WW/GG

ACC NR: AP6002742 SOURCE CODE: UR/0056/65/049/006/1957/1972

AUTHOR: Khalatnikov, I. M.; Chernikova, D. M. 72 B

ORG: Institute of Theoretical Physics, Academy of Sciences SSSR (Institut teoreticheskoy fiziki Akademii nauk SSSR)

TITLE: Relaxation phenomena in superfluid helium 21 21 27

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1965, 1957-1972

TOPIC TAGS: liquid helium, superfluidity, phonon interaction, phonon scattering, kinetic equation, acoustic propagation, relaxation process

ABSTRACT: Since the propagation of sound in a superfluid cannot be considered in the hydrodynamic approximation at high frequencies and the kinetic equation must be used, the authors solve the problem by analyzing the various interactions between the different excitations (phonons and rotons) in the superfluid. The cross sections for the scattering of phonons by phonons, phonons by rotons, and rotons by rotons are determined and the corresponding kinetic equations analyzed. It is shown that the longest relaxation time is possessed by the interaction between the phonon and roton gases. A system of equations, valid for both high and low frequencies, is derived, describing the propagation of sound oscillations with allowance for the relaxation processes. Orig. art. has: 1 figure and 43 formulas.

SUB CODE: 20/ SUBM DATE: 26Jul65/ ORIG REF: 012/ OTH REF: 014

Card 1/1 lo

CHERNIKOVA, I.N.

AUTHOR: Chernikova, I. N. 126-1-14/40

TITLE: Investigation of the tempering of hardened steel by using the method of internal friction. (Issledovaniye otpuska zakalennoy stali metodom vnutrennego treniya).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 102-105 (USSR)

ABSTRACT: The internal friction was studied of five carbon steels containing respectively 0.015, 0.28, 0.35, 0.46 and 0.58 wt.% C; the exact analyses are given in Table 1. Wire specimens of 0.7 mm dia. and 320 mm length were used; from a 70 kg ingot 9 mm rods were forged which were then used for drawing wires of 0.7 mm dia. applying intermediate annealing at 800 to 850°C. The heat treatment data are entered in Table 2, the characteristic of the internal friction in the temperature range from room temperature to 600°C is expressed by a family of curves reproduced in the graphs, Figs.1-5. For steel containing 0.015% C a "low temperature peak" was detected at about 40°C which is attributed to the presence of carbon atoms in the α-iron lattice forming a penetration type solid solution. It is shown that the internal friction peak at 200°C can be used for

Card 1/2